

"TRADER" SERVICE SHEET

812

# ALBA 474 & 461

A.C./D.C. 3-BAND SUPERHETS

THE Alba 474 is a 4-valve (plus rectifier) 3-band superhet designed for A.C. or D.C. mains of 200-250 V, 40-100 c/s in the case of A.C. The 461 A.C./D.C. employs a similar chassis.

Release date and original prices: 474, October, 1946; £18 18s plus £4 1s 4d p.t.; 461, August, 1946; £17 17s plus £3 16s 10d p.t.

## CIRCUIT DESCRIPTION

Aerial input to single-tuned circuits, which precede a triode hexode valve (V1, Mullard metallized CCH35) operating as frequency changer with internal coupling.

Triode oscillator grid coils L7 (S.W.), L8 (M.W.) and L9 (L.W.) are tuned by C37. Parallel trimming by C38 (S.W.), C39 (M.W.) and C40 (L.W.); series tracking by C11 (S.W.), C12 (M.W.) and C13 (L.W.). Reaction coupling by coils L10 (S.W.), L11 (M.W.) and L12 (L.W.).

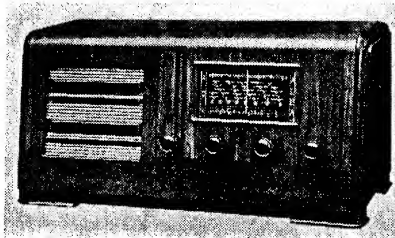
Second valve (V2, Mullard metallized EF39) is a variable-mu RF pentode operating as intermediate frequency amplifier.

Intermediate frequency 460 kc/s.

Diode second detector is part of double diode triode valve (V3, Mullard metallized EBC33). Audio frequency component in rectified output is developed across load resistor R8 and passed via A.F. coupling capacitor C22, switch S13 and manual volume control R9 to control grid.

Second diode of V3, fed from L16 via C24, provides D.C. potentials which are developed across load resistor R12 and fed back through decoupling circuits as G.B. to E.C. (except on S.W.) and I.F. valves, giving automatic volume control. Delay voltage, together with fixed G.B. for V1, V2 and V3, is obtained from the drop along R6, which is common to the cathode circuits of the three valves.

Resistance-capacitance coupling by R10, C26 and R13, via grid stopper R14, between V3 triode and pentode output valve (V4, Mullard CL33).



The Alba 474 A.C./D.C. superhet.

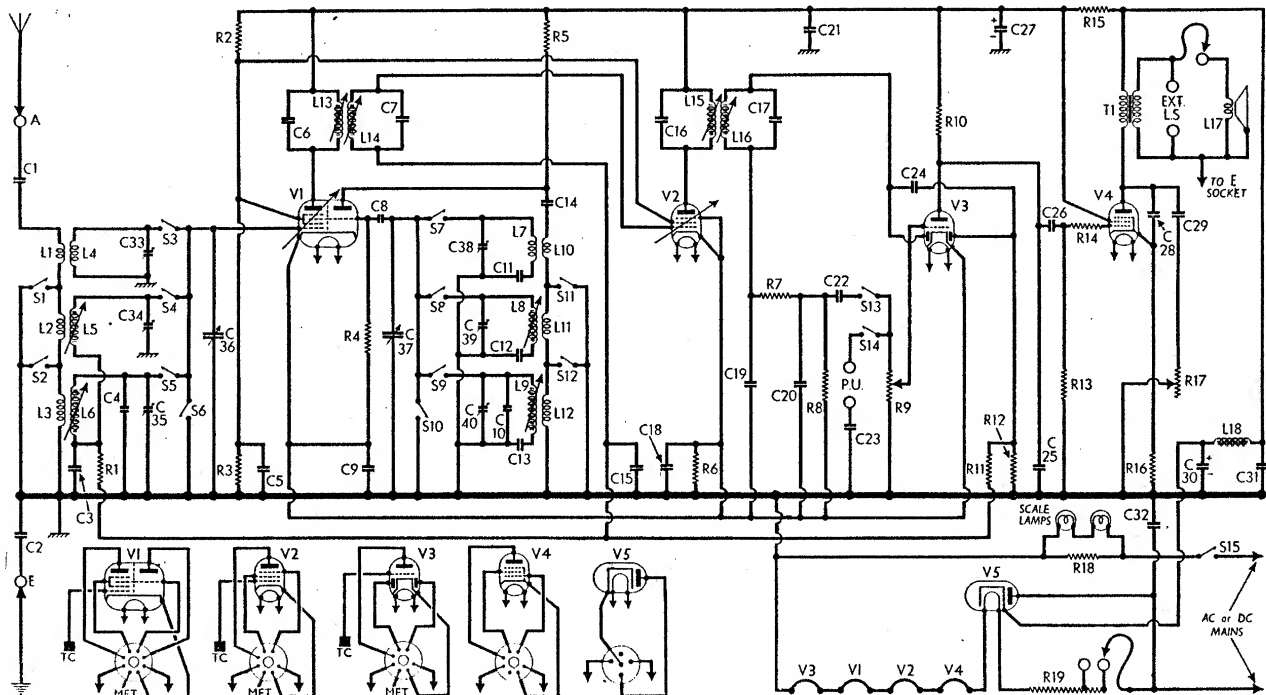
## COMPONENTS AND VALUES

RESISTORS		Values (ohms)
R1	V1 hex. C.G. decoupling...	250,000
R2	V1, V2 S.G.'s H.T. feed	22,000
R3	potential divider	30,000
R4	V1 osc. C.G. resistor	47,000
R5	V1 osc. anode H.T. feed	27,000
R6	V1, V2, V3 fixed G.B. resistor	150
R7	I.F. stopper	47,000
R8	V3 signal diode load	470,000
R9	Manual volume control	1,000,000
R10	V3 triode anode load	47,000
R11	A.V.C. line decoupling	1,000,000
R12	V3 A.V.C. diode load	1,000,000
R13	V4 C.G. resistor	500,000
R14	V4 grid stopper	47,000
R15	H.T. smoothing resistor	1,500
R16	V4 G.B. resistor	150
R17	Variable tone control	50,000
R18	Scale lamp shunt	40
R19	Heater ballast resistor	700*

\* Tapped at 600  $\Omega$  + 100  $\Omega$  from V5 heater.

CAPACITORS		Values ( $\mu$ F)
C1	Aerial series capacitor	0.0002
C2	Earth isolator	0.05
C3	V1 hex. C.G. decoupling	0.05
C4	Aerial L.W. fixed trimmer	0.000056
C5	V1, V2 S.G.'s decoupling	0.1
C6	1st I.F. transformer fixed tuning capacitors	0.0001
C7	V1 osc. C.G. capacitor	0.000047
C8	V1 cathode by-pass	0.1
C9	Osc. L.W. fixed trimmer	0.000056
C10	Osc. circ. S.W. tracker	0.0056
C11	Osc. circ. M.W. tracker	0.000575
C12	Osc. circ. L.W. tracker	0.0002
C13	V1 osc. anode coupling	0.0001
C14	A.V.C. line decoupling	0.05
C15	2nd I.F. transformer fixed tuning capacitors	0.0001
C16	V1, V2, V3 cathode by-pass	0.5
C17	I.F. by-pass capacitors	0.0001
C18	H.T. circuit R.F. by-pass	0.1
C19	A.F. coupling to V3 C.G.	0.005
C20	Pick-up isolator	0.25
C21	V3 A.V.C. diode coupling	0.0002
C22	I.F. by-pass	0.0002
C23	A.F. coupling to V4 C.G.	0.01
C24	H.T. smoothing capacitor	16.0
C25	Fixed tone corrector	0.005
C26	Part variable tone control	0.05
C27	H.T. smoothing capacitors	8.0
C28	Mains R.F. by-pass	16.0
C29	Aerial circ. S.W. trimmer	0.05
C30	Aerial circ. M.W. trimmer	0.00005
C31	Aerial circ. L.W. trimmer	0.00005
C32	Aerial circuit tuning	0.0005
C33	Oscillator circuit tuning	0.0005
C34	Osc. circ. S.W. trimmer	0.00005
C35	Osc. circ. M.W. trimmer	0.00005
C36	Osc. circ. L.W. trimmer	0.00005
C37		
C38		
C39		
C40		

\* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Alba 474 and 461 A.C./D.C. superhets.

A common cathode circuit is used for V1, V2 and V3.

OTHER COMPONENTS			Approx. Values (ohms)
L1	Aerial S.W. coupling coil ...	0.2	
L2	Aerial M.W. coupling coil ...	0.8	
L3	Aerial L.W. coupling coil ...	85.0	
L4	Aerial S.W. tuning coil ...	0.1	
L5	Aerial M.W. tuning coil ...	3.0	
L6	Aerial L.W. tuning coil ...	19.5	
L7	Osc. S.W. tuning coil ...	0.2	
L8	Osc. M.W. tuning coil ...	1.8	
L9	Osc. L.W. tuning coil ...	4.8	
L10	Osc. S.W. reaction coil ...	0.4	
L11	Osc. M.W. reaction coil ...	1.1	
L12	Osc. L.W. reaction coil ...	2.4	
L13	1st I.F. trans. { Pri. ...	9.0	
L14		9.0	
L15	2nd I.F. trans. { Pri. ...	6.0	
L16		6.0	
L17	Speaker speech coil ...	2.0	
L18	H.T. smoothing choke ...	200.0	
T1	Output { Pri. ...	370.0	
	trans. { Sec. ...	0.25	
S1-S14	Waveband switches	—	
S15	Mains switch, ganged R17	—	

### VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver. Voltages were measured on the 400 v scale of a model 7 Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 CCH35	187	1.65	77	1.5
V2 EF39	84	3.8	77	1.3
V3 EBC33	97	1.7	—	—
V4 C133	202	42.5	187	5.1
V5 1105†	—	—	—	—

† Cathode to chassis, 232 V, D.C.

### DISMANTLING THE SET

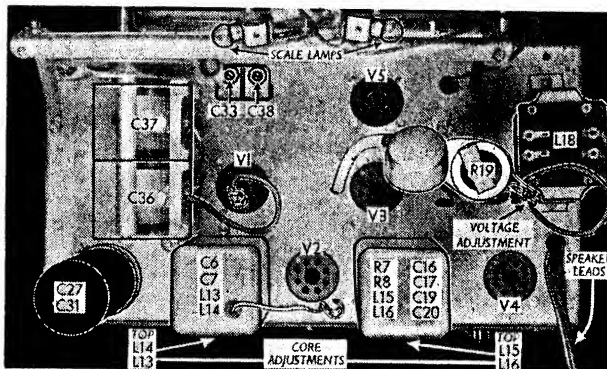
**Removing Chassis.**—Remove the control knobs (recessed grub screws) and the four chassis fixing screws, and unsolder the speaker leads; lift rear of chassis and lift out.

**When replacing,** connect the speaker leads as follows, numbering the tags on the connecting panel from top to bottom; 1, brown; 2, red; 3, white; 4, blue; 5, yellow.

**Removing tuning assembly.**—Unsolder from the seven tags on the assembly the leads connecting it to chassis, also the systoflex covered wire going to the right-hand tag on the volume control and the braided earthing lead which joins a "star" tag to the right of the assembly.

Switch set to S.W. and loosen the grub screw of the waveband indicator operating arm, and

Plan view of the chassis. The positions of the I.F. transformer core adjustments are approximately indicated. Several components are housed in the 2nd I.F. can.



slide the arm off the waveband switch spindle; remove the four cheese-head screws (with lock washers) securing the tuning assembly to the front chassis member, and lift out the assembly. When replacing, the heads of the two trimmers

and the braided earthing lead should be soldered to the "star" tag to the right of the tuning assembly.

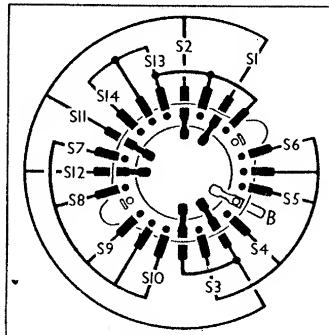
### GENERAL NOTES

**Tuning Assembly.**—This contains all the R.F. and oscillator coils L1-L12 and associated trimmers and trackers, together with the waveband switch unit S1-S14. Instructions for removing and replacing the assembly are given under "Dismantling the Set."

**Switches.**—S1-S14 are the waveband and pick-up switches, ganged in a single rotary unit in the tuning assembly. In the diagram in col. 2, the unit is drawn in detail as seen when the cover is removed from the tuning assembly, and the latter is inverted, as seen in our under-chassis view. The table below gives the switch positions for the four control settings, starting from the anti-clockwise position of the control. A dash indicates open, and C closed.

**Scale Lamps.**—These are two Osram M.E.S. type lamps, rated at 4 V, 0.3 A.

**External Speaker.**—Two sockets are provided at the rear of the chassis for a low impedance (2.5Ω) external speaker. A plug and socket device permits the internal speaker to be muted.



The switch unit, as seen from the rear.

(C33, C39) should project through the hole in the chassis deck. Connect the leads to the tuning assembly as follows, numbering the tags from left to right: 1, to C8 and C37; 2, to C14; 3, screened lead to "live" P.U. socket; 4, screened lead to C22; 5, to C1; 6, to the junction of R1 and C3; 7, to C36. The systoflex covered lead emerging from the front of the assembly goes to the right-hand tag on the volume control,

Switch	S.W.	M.W.	L.W.	Gram.
S1	C	—	—	—
S2	—	C	—	—
S3	C	—	—	—
S4	—	C	—	—
S5	—	—	C	—
S6	—	—	—	C
S7	C	—	—	—
S8	—	C	—	—
S9	—	—	C	—
S10	—	—	—	C
S11	C	—	—	—
S12	C	C	—	—
S13	C	—	C	—
S14	—	—	—	C

### CIRCUIT ALIGNMENT

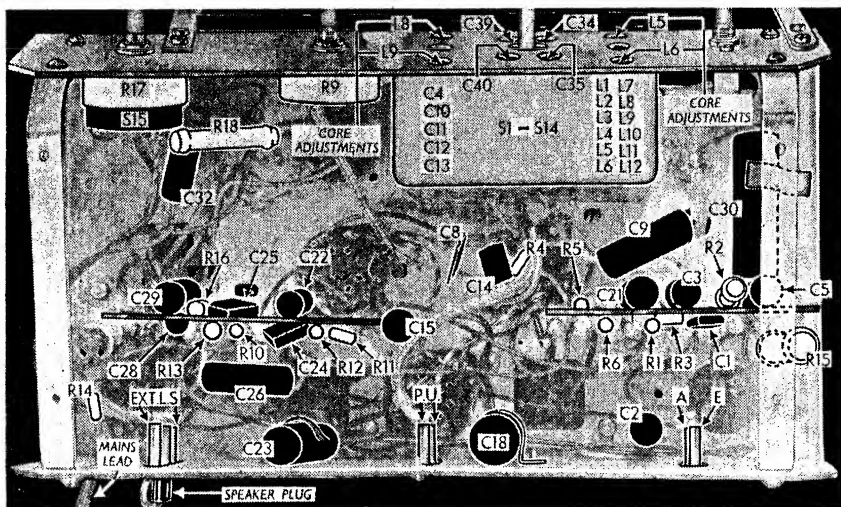
**I.F. Stages.**—Connect signal generator leads to control grid (top cap) of V1 and chassis, turn the volume control to maximum, feed in a 460 kc/s (652.1 m) signal, and adjust the cores of L13, L14, L15 and L16 for maximum output.

**R.F. and Oscillator Stages.**—With the gang at maximum, pointer should coincide with the high wavelength ends of the scales. Transfer signal generator leads, via a suitable dummy aerial, to A and E sockets.

**M.W.**—Switch set to M.W., tune to 215 m on scale, feed in a 215 m (1,396 kc/s) signal, and adjust C39, then C34 for maximum output. Tune to 500 m on scale, feed in a 500 m (600 kc/s) signal, and adjust the cores of L8 and L5 for maximum output. Check L8 at 350 m (857 kc/s) for correct calibration, and repeat the C39, C34 adjustments if necessary.

**S.W.**—Switch set to S.W., tune to 18 m on scale, feed in an 18 m (16.67 Mc/s) signal, and adjust C38, then C33, for maximum output.

**L.W.**—Switch set to L.W., tune to 1,000 m on scale, feed in a 1,000 m (300 kc/s) signal, and adjust C40, then C35, for maximum output. Tune to 1,900 m on scale, feed in a 1,900 m (157.9 kc/s) signal, and adjust the cores of L9 and L6 for maximum output. Check the settings of C40, C35.



Under-chassis view. The tuning assembly is the large unit seen at about top centre.